APPLICATION NOTE 297

Tripler Converts 5V to 15V

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Abstract: This application note shows how to configure the MAX1683 to triple the input voltage for low-current applications while minimizing voltage drop.

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By configuring a charge-pump voltage doubler as a tripler, you can readily derive 15V from 5V. A 15V rail is useful for powering op amps, LCD-bias circuits, and other low-current applications.

The connections in Figure 1 configure the MAX1683 voltage doubler as a tripler. The no-load output voltage of the circuit is approximately $3V_{IN} - 2V_D$, where $V_D$ is the voltage drop across one diode. Use Schottky diodes as shown to minimize $V_D$ and its effect on output voltage.

![Figure 1. This circuit (almost) triples the input voltage for low-current applications.](image)

Because the circuit's finite output impedance causes the output voltage to drop with load current (Figure 2), a practical limit for load current is approximately 30mA.
Figure 2. Finite output impedance causes a decline in voltage with increasing load current.

Related Parts

MAX1683 Switched-Capacitor Voltage Doublers Free Samples

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